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EUGNAMPTUS PROTERUS, N. SP. (COLEOPTERA: CURCULIONOIDEA: RHYNCHITIDAE), A TOOTH-NOSED SNOUT BEETLE IN MEXICAN AMBER

GEORGE POINAR, JR. AND ALEX E. BROWN

(GP) Department of Zoology, Oregon State University, Corvallis, OR 97331, U.S.A. (e-mail: poinarg@science.oregonstate.edu); (AEB) 629 Euclid Avenue, Berkeley, CA 94708, U.S.A.

Abstract.—a **new species** of tooth-nosed snout beetle, ***Eugnamptus proterus* Poinar and Brown** (Coleoptera: Curculionoidea: Rhynchitidae) is described from Mexican amber. Distinguishing characters include 1) the next to last strial row joins the last strial row near the middle of the elytra, 2) the presence of a median longitudinal ridge on the rostrum, 3) long, slender, erect dark setae on the frons, 4) a narrow, cylindrical prothorax and extended "neck" region and 5) unusually broad claw appendages. Based on the available literature, the closest described extant species is the Japanese *E. aurifrons* Roel. A brief survey of fossil rhynchitids is presented.

Key Words: *Eugnamptus proterus*, Rhynchitidae, Curculionoidea, Mexican amber

The tooth-nosed snout beetles (Rhynchitidae), often considered a subfamily of the leaf-roller weevils (Attelabidae), are a primitive group that Zimmerman (1994) assigned to his "convenience" Division Orthoceri based on their non-geniculate, straight antennae. There are over 1,000 described species in 49 genera, and while the range is cosmopolitan, most taxa are restricted to the warmer portions of the globe (Zimmerman 1994; Kuschel 1995; Thompson 1992; Voss 1941).

The present study describes a representative of this group in Mexican amber.

MATERIALS AND METHODS

The specimen was obtained from an amber mine in the Simojovel area of Chiapas, Mexico. Locations of the Chiapas mines and a synopsis of Mexican amber are presented in Poinar (1992). Amber from this region was produced by *Hymenaea mexicana* (Fabaceae) (Poinar and Brown 2002) and occurs in lignitic beds among sequences of primarily marine calcareous sandstones and silt. The amber is associated with Balumtun Sandstone of the early Miocene and the La Quinta formation of the Late Oligocene with radiometric ages from 22.5 to 26 million - years (Berggren and Van Couvering 1974). Since the amber is secondarily deposited in these marine formations, it is somewhat older than the above dates.

The piece of amber containing the fossil is 11 mm long, 5 mm wide and 4 mm deep. The body length measurement was a direct line from the tip of the elytra to the anterior border of the eyes (excluding the rostrum). Body width was taken at the widest part of the elytra, head length was measured as the portion of the head bordered by the eyes, head width at the widest point between the eyes, frons width was the head width at

the midpoint of the eyes, neck length was measured from the posterior border of the eyes to the anterior collar of the pronotum, and head- eye width was the distance from the outer rim of one eye across the head to the outer rim of the opposite eye. All measurements are in mm unless otherwise specified.

The specimen is complete and well preserved. In the same piece of amber are an oribatid mite, an adult gall gnat (Diptera: Cecidomyidae) and a worker ant of the genus *Azteca* (Hymenoptera: Formicidae). Systematic placement follows that of O'Brien and Wibmer (1982) and the generic diagnoses of *Eugnamptus* Schönherr as presented by Voss (1941) and Hamilton (1989) were used.

Eugnamptus proterus Poinar and Brown, new species

(Figs. 1–4)

Description.—Length, 4.7; width, 1.3; color reddish brown throughout, antennal funicle paler.

Head: Elongated, somewhat dorsoventrally flattened; length (0.60) greater than width (1.30); frons wide, width, 0.38; head-eye width, 0.96; weakly narrowed behind eyes; portion between eyes with few scattered medium-sized punctures; most of rostrum with few barely detectable fine punctures; neck (length, 0.40) with small punctures arranged in longitudinal rows; approximately equal to width at base of rostrum; length rostrum, 1.20; eyes large, protruding, distance between outer borders slightly less than length of rostrum; rostrum long, narrow, broadening at apex, longer than head but shorter than head + pronotum; rostrum with median longitudinal ridge extending from between antennal insertions toward apex; antennae insertions at middle of rostrum; scape longer than first funicular joint; club subequal to funicle in length; club segments elongate, subequal in length.

Thorax: Pronotum cylindrical, longer than wide, widest at middle; with four irregular longitudinal rows of medium- to large- sized puncta; legs elongate, all terminated by paired pointed claws with unusually broad appendages at bases.

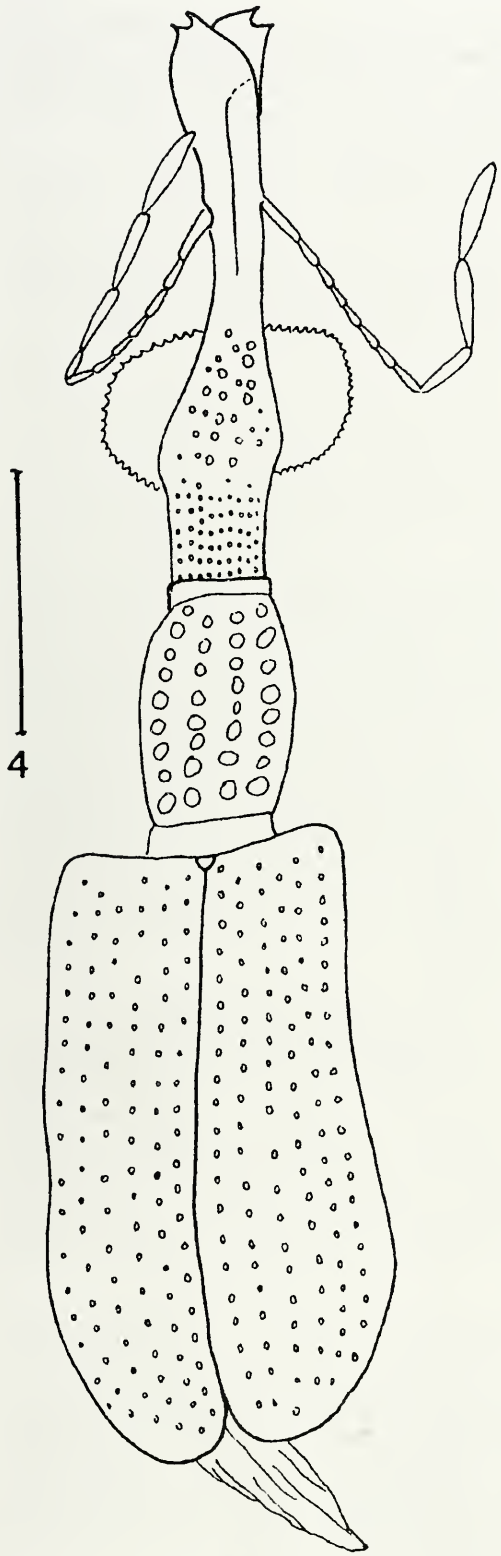
Abdomen: First ventral suture not distinctly impressed throughout; elytra long and narrow (2 ½ times longer than wide), widest near declivities, lacking noticeable spots; with rows of small puncta; next to last strial row joins last strial row near middle of elytron; rows of semi-erect to reclinate setae associated with elytral interspaces; scattered larger erect setae between rows of puncta; scutellum small, partly concealed; scutellar striole not visible; pygidium obscured by partially exposed inner wings.

Material examined.—Holotype female in amber from Chiapas, Mexico. Deposited in the Poinar amber collection maintained at Oregon State University (accession number C-7-402).

Etymology.—The specific epithet "proterus," a latinised adjective derived from the Greek próteros meaning earlier, refers to the specimen being the first definite fossil representative of the genus.

Comments.—Whether the pygidium is or is not exposed is a character used in separating members of this group (Voss 1941; Hamilton and Novinger 2004). It is not possible to determine if the tip of the pygdium is exposed since that area is covered by the tips of the inner pair of wings. However, based on the curved tips of the elytra, it is likely that at least some portion of the pygidium would have been exposed in life. The character "next to last strial row joins the last strial row near the middle of the elytron" places the fossil in the subgenus *Eugnamptobius* Voss (1941) however this taxon was given generic status by Legalov (2003). In the key to the species of this subgenus provided by Voss (1941), the fossil runs to the Japanese *E. aurifrons* Roel. Both species share several

Figs. 1–3. *Eugnamptus proterus* in Mexican amber. 1, Lateral view. Bar = 0.85 mm. 2, Frontal view showing rostral ridge. Bar = 0.37 mm. 3, Appendiculate claw. Bar = 0.07 mm.



characters, including a medial carina on the rostrum. However, the fossil is larger in total length (4.7 mm vs. 3.5 mm) and has a head width (including eyes) of almost 1.5 times the width of the prothorax (this ratio is roughly equal in *E. aurifrons*).

In the key to the La Selva species of Eugnamptina (Hamilton and Novinger 2004), the fossil keys to the couplet separating *E. pusillus* Hamilton and Novinger and *E. herediensis* Hamilton and Novinger. These two species are separated by color differences, which cannot be used in the fossil since lighter colors darken over time. However, both of these extant species have shortened elytra depressed behind the scutellum, which is not the case with the present fossil. Other extant species that resemble *E. proterus* are *E. rufifrons* Sharp and *E. obscurus* Sharp (Sharp 1889; Legalov 2003). However, in these species, the length of the abdomen is longer or at most subequal to the combined lengths of the head (including beak) and thorax, while in *E. proterus*, the combined length of the head and thorax is 1.3 times the length of the abdomen.

Distinguishing characters of the fossil include the median longitudinal carina extending from the antennal insertions almost to the apex of the rostrum, the elongate "neck" region, the cylindrical, narrow pronotum, a head width of almost 1.5 times the width of the prothorax and the unusually wide claw appendages.

Discussion

All previously described fossils assigned to the family Rhynchitidae are impression fossils and many of their

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Fig. 4. Dorsal view of *Eugnamptus proterus* in Mexican amber. Scutellar striole not visible. Bar = 1.0 mm.

characters are difficult to discern. Two previous fossils have been described in the genus *Eugnamptus*, namely *E. decemsatus* Scudder 1878 and *E. grandaevus* Scudder 1890, both from the Eocene Green River shales. However, the specimens (three of *E. grandaevus* and one of *E. decemsatus*) are all fragmentary and their assignment to the genus *Eugnamptus* is questionable. In a later work listing the fossil weevils from the United States, Scudder (1893) acknowledged that neither of these two fossil species were placed in *Eugnamptus* "with any great confidence."

Also in his 1893 publication, Scudder described an additional seven genera of Rhynchitidae in his newly proposed subfamily Isotheinae from the Florissant beds in North America. He characterized the subfamily as having the insertion of the antennae "before the middle of the basal half of the straight and porrect beak." The straight and porrect beak separates these genera from species in the genus *Eugnamptus*, including the present fossil. Other fossil rhynchitids include members of the genus *Masteutes* Scudder 1893 as well as species of *Auletes* Schönherr and *Rhynchites* Schneider (Scudder 1893), all of which are morphologically distinct from the present fossil. The fossil genus *Eugnamptidea* Wickham 1912 has a four-segmented club and *Rhynchites martynovi* Ter-Minasyan (1947) from Pleistocene shales in Asia is much larger and has characters similar to those of the genus *Rhynchites*.

Zherichin (1992) described four fossil attelabids from the Upper Oligocene of Rott, Siebengebirge, Germany. All of them (*Cartorhynchites struvei* Zherichin, *Coenorhinus goergesi* Zherikhin, *Involvulus rottensis* Zherichin, and *Involvulus* ? sp.) lack a distinct neck region and have compact club segments, which distinguishes them from *E. proterus*. Both fossil species *Rhynchites hageni* Heyden and Heyden (1866) and *Rhynchites orcinus* Heyden and Heyden (1866) have antennae with thickened clubs inserted at the base of the rostrum and robust bodies with a straight beak, which differs from that of the present fossil.

The biology of eugnamptines is poorly known although most appear to have arboreal habits. Adults of the North American *Eugnamptus angustatus* (Herbst) feed and mate on sassafras trees while the larvae mine both dead and living leaves of sassafras, oak, walnut, dogwood, hickory and black gum (Hamilton 1980; Bright 1993). In Central America, species of *Eugnamptus* have been recovered from the tree families, Anacardiaceae, Hernandiaceae, Leguminoseae, Meliaceae, Myristicaceae, Sabiaceae and Tiliaceae (Hamilton and Novinger 2004). The flora in Mexican amber has been little studied; however, aside from *Hymenaea mexicana* Poinar and Brown (2002) (Fabaceae), Miranda (1963) described *Tapirira durhamii* Miranda (Anacardiaceae) and an *Acacia* sp. (Fabaceae) from these deposits. It is interesting that *Tapirira guianensis* Aubl. was one of the trees from which Hamilton and Novinger (2004) obtained *Eugnamptus* for their studies.

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